

## Claims

1. Method for communication in a radio communication system, comprising network-side devices (APS1, APS2, ANT-A, ANT-B, ANT-C, ANT-D, ANT-E), mobile stations (MS), and network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) distributed over a plurality of roughly regular positions over a radio cell, in which a message (ADD) of a mobile station (MS) is received by at least some of the network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E), subsequently a user data message (DATA) is transmitted via a plurality of the network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) to the mobile station (MS), with which network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) belonging to the plurality of network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) depending on which network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) have received the message (ADD) of the mobile station (MS), characterized in that a signaling message (ADR) which requests the mobile station (MS) to transmit a response message (ADD) is transmitted via at least one network-side antenna (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) to the mobile station (MS), with the signaling message being used exclusively for the purposes of requesting the response message (ADD), and the message (ADD) received on the network side being a response message (ADD) sent in response to the receipt of a signaling message (ADR).
2. Method according to claim 1, characterized in

that,

the signaling message (ADR) is sent at regular first intervals.

3. Method in accordance with one of the claims 1 to 2, characterized in that the signaling message (ADR) is transmitted before the transmission of the user data message (DATA) to the mobile station (MS) under the condition that a specific second period of time has elapsed since the last transmission of a message of the same type as the signaling message (ADR).
4. Method in accordance with one of the claims 1 to 3, characterized in that the signaling message (ADR) is transmitted via all network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) of one or more radio cells (FZ1, FZ2) of the radio communications system or via all network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) of the radio communications system.
5. Method in accordance with one of the claims 1 to 4, characterized in that the plurality of network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) belong to same radio cell (FZ1, FZ2) of the radio communications system, or at least some of the network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) of the plurality of network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) belong to different radio cells (FZ1, FZ2) of the radio communications system.
6. Method in accordance with one of the claims 1 to 5, characterized in that the signaling message (ADR) comprises identification information of the relevant radio cell (FZ1, FZ2), about

the network-side antenna (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) or antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) via which it is transmitted, and  
the response message (ADD, ACK) comprises identification information of that radio cell or radio cells (FZ1, FZ2), from the network-side antenna or antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) of which the mobile station (MS) has received the signaling message (ADR).

7. Network-side device (APs1) in a radio communications, which comprises network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) distributed roughly regularly at a plurality of positions over a radio cell,  
with means (RECEIVE) for receiving via at least some of the network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) a message (ADD) of a mobile station (MS) or for receiving information about the receipt of a message (DD) of a mobile station received via at least some of the network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E), with the message (ADD) received on the network side being a response message (ADD) received in response to a signaling message (ADR) received via at least one network-side antenna (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) to the mobile station (MS) transmitted exclusively for the purposes of requesting the response message (ADD) which requests the mobile station (MS) to send a response message (ADD),  
with means (INSTRUCT) for arranging that a user data message (DATA) is transmitted via a plurality of the network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) to the mobile station (MS),  
with means (DECIDE) for deciding whether network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) belong to the plurality of network-side antennas (ANT-A, ANT-B, ANT-C,

ANT-D, ANT-E) depending on which network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) have received the message (ADD) of the mobile station (MS).

8. Computer program product for a network-side device (APS1) in a radio communications system, which comprises antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) distributed roughly regularly at a plurality of positions over a radio cell, with means for receiving information about the receipt of a message (ADD) of a mobile station received via at least some of the network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E), with the message (ADD) received on the network side being a response message (ADD) received in response to a signaling message (ADR) received via at least one network-side antenna (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) to the mobile station (MS) transmitted exclusively for the purposes of requesting the response message (ADD) which requests the mobile station (MS) to send a response message (ADD),
- with means for deciding that a user data message (DATA) will be sent over a plurality of network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) to the mobile station (MS),
- with means for deciding whether network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) belong to the plurality of network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E), depending on which network-side antennas (ANT-A, ANT-B, ANT-C, ANT-D, ANT-E) have received the message (MESSAGE; ADD, ACK) of the mobile station (MS).